



**SIEMAG
TECBERG**

TECHNICAL INFORMATION

MINE COOLING SYSTEM

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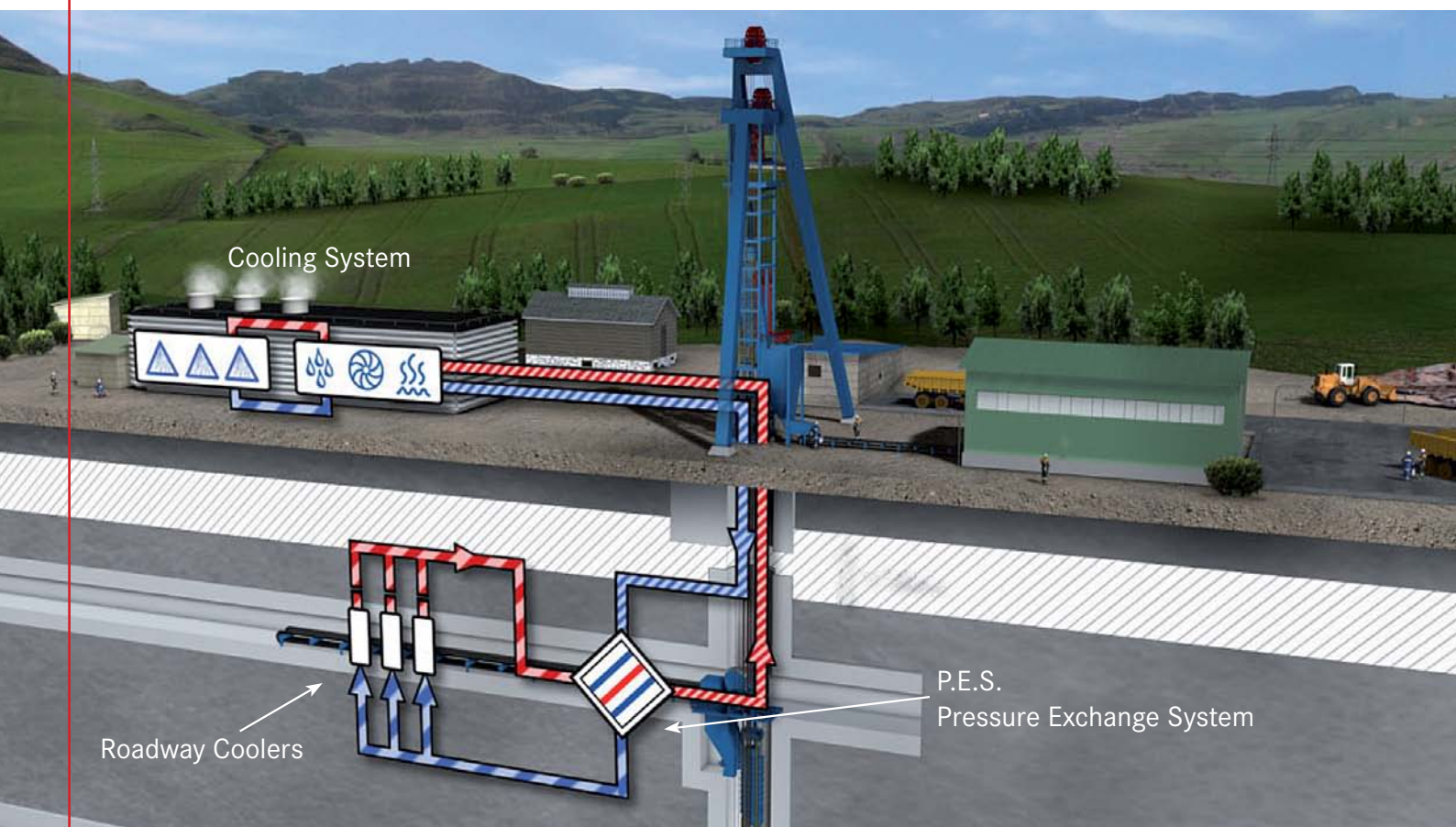
Climate stress is intensified due to the fact that not only shaft depths are going deeper, but also continued mechanisation and the increasing concentration of digging in the working faces result in higher temperatures. Apart from mine-air measures, ergonomic guidelines and regulations require the cooling of underground work places. Today's modern high-performance mines very often need cooling capacities exceeding 10 MW. The most economic way is a central cooling system on surface, where the latest technologies and the most efficient concepts can be applied.

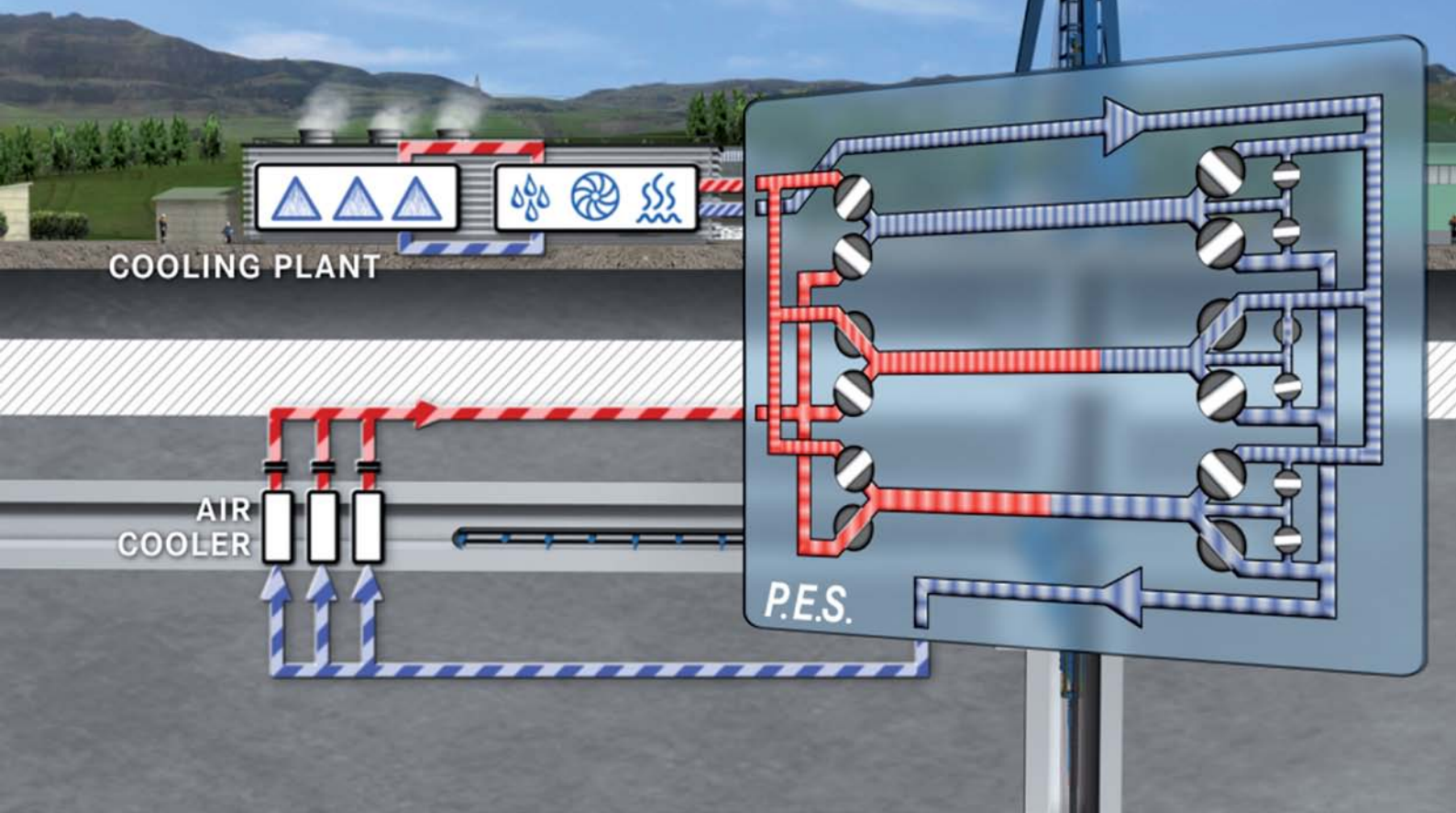
- Trigeration system / Absorption chiller machine (Clean Development Mechanism)
- „Free cooling” – cold water production without chiller
- Energy-efficient high-performance chillers with state-of-the-art compressor technology

The cold water will be provided from the cooling system on surface to the roadway cooler via the piping.

Roadway coolers are air-water-heat exchangers which will cool down and dehumidify the mine air with cold water. For the effective operation of the roadway coolers, the water inlet temperature should be as low as possible. This goal is achieved by using the SIEMAG TECBERG Pressure Exchange System (P.E.S.). The temperature increase of the cold water via the P.E.S. is lower than 0.5 °C and, in addition to the low temperature increase, the high pressure of the cold water will be transferred to the warm water. With this transferred energy, the warm water will be transported to the central cooling system on surface. During the pressure exchange in the P.E.S., the cold water gets the operation pressure of the underground piping. In this way, the pressure rating of the underground piping is independent of the depth of the mine, and this will save investment for piping, valves, etc.

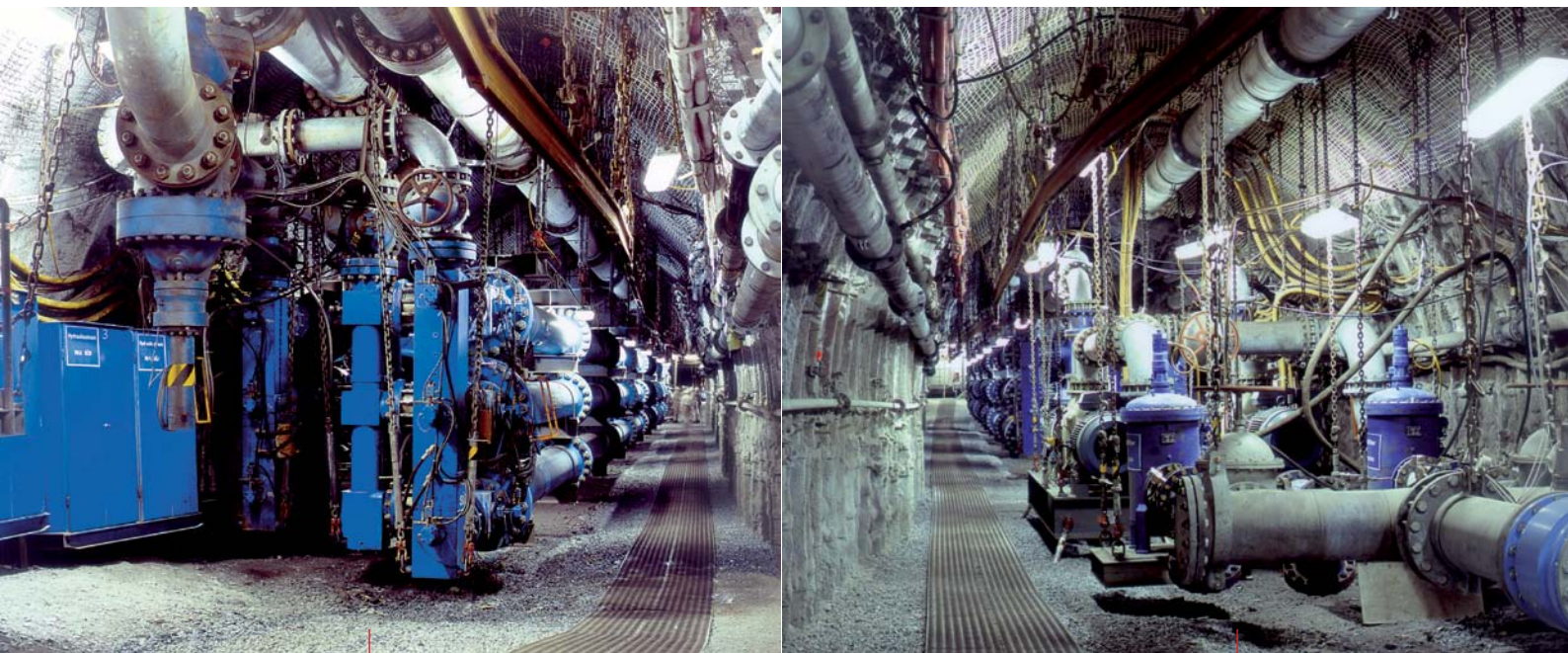
- Temperature decrease <0.5 °C on an average
- Cooling capacity transfer up to 20 MW with one P.E.S.
- Pressure exchange up to 150 bar with one P.E.S.
- Constant lifelong efficiency





For more than 25 years, SIEMAG TECBERG has been working in the field of mine cooling. In cooperation with end users and appropriate experienced companies, concepts for mine cooling were designed and realised.

SIEMAG TECBERG has repeatedly proven its competence in engineering, programming, supply, installation, and commissioning in a variety of mine cooling projects worldwide.



MOAB KHOTSONG MINE, a large cooling system with pressure exchange systems (P.E.S.)



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